ASF SAR PROCESSOR HARDWARE IMPLEMENTATION STUDY

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The Alaska SAR Facility is currently undergoing an upgrade development effort to accommodate the upcoming ERS-2 (late 1994) and RADARSAT (early 1995) satellites. The current Alaska SAR Processor (ASP) at ASF, being a custom-built hardware pipeline design, cannot be effectively modified to handle the ScanSAR mode data from RADARSAT nor the high precision processing requirements. As part of the ASF upgrade effort, a new ScanSAR Processor (SSP) is planned to specifically handle the ScanSAR mode data from RADARSAT, and a Precision Processor (PP) to provide the high precision processing capability. The current plan is to implement both the SSP and the PP on a single processing platform. And to maintain maximum flexibility for future sensors, these processing capabilities will be implemented in software running on commercial off-the-shelf computing equipment.

The evaluation of a suitable computing platform that satisfies the SSP and PP requirements has been the focus of our study for the past few months. Processing algorithms have been examined and analyzed to determine their performance potential in terms of image quality and computation complexity. Computer market survey has been conducted to determine the applicability of the more advanced machine configuration and architect ure. Benchmark programs have been written to ru n on some of the more promising machines available today.

This paper summarizes the progress of this study effort to-date. The design goals for the SSP and PP will be described. Algorithms and their computation loading will be analyzed. The selection and implementat ion of the benchmark software will be outlined. And finally the benchmark results for a list of candidate machine will be given.